

C-130 Avionics Modernization Program



Update for RROC

Col Robert Speer
AFRC/XPR, OL-S



C-130 Avionics Modernization Program

Replan Results

Program Overview

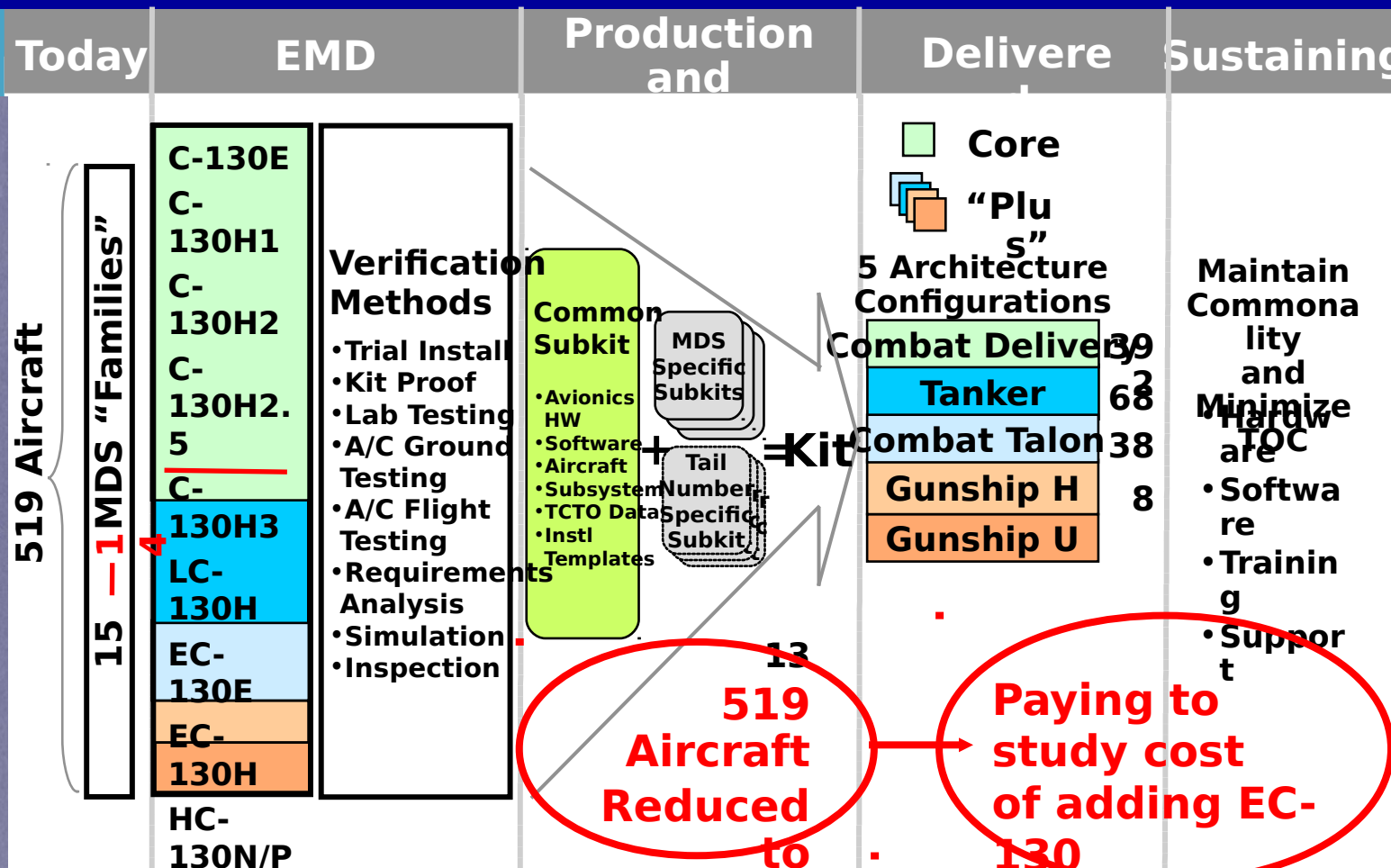


- ♦ **Reduces FY03/FY04 costs (\$100M cut in 03 & 04)**
 - Still ~ \$15M disconnect in FY04
- ♦ **Funding reduction impacts:**
 - Schedule delays (1 year slip to first flight, ~2 year slip to EMD completion)
 - Delay to key design reviews (PDR and CDR)
(Exec CDR not until 7 mos prior to 1st flight)
 - Cost growth
- ♦ **Provides more time to develop TF technology**
- ♦ **Provides more time for software development**



Developing Our Product

Program Overview



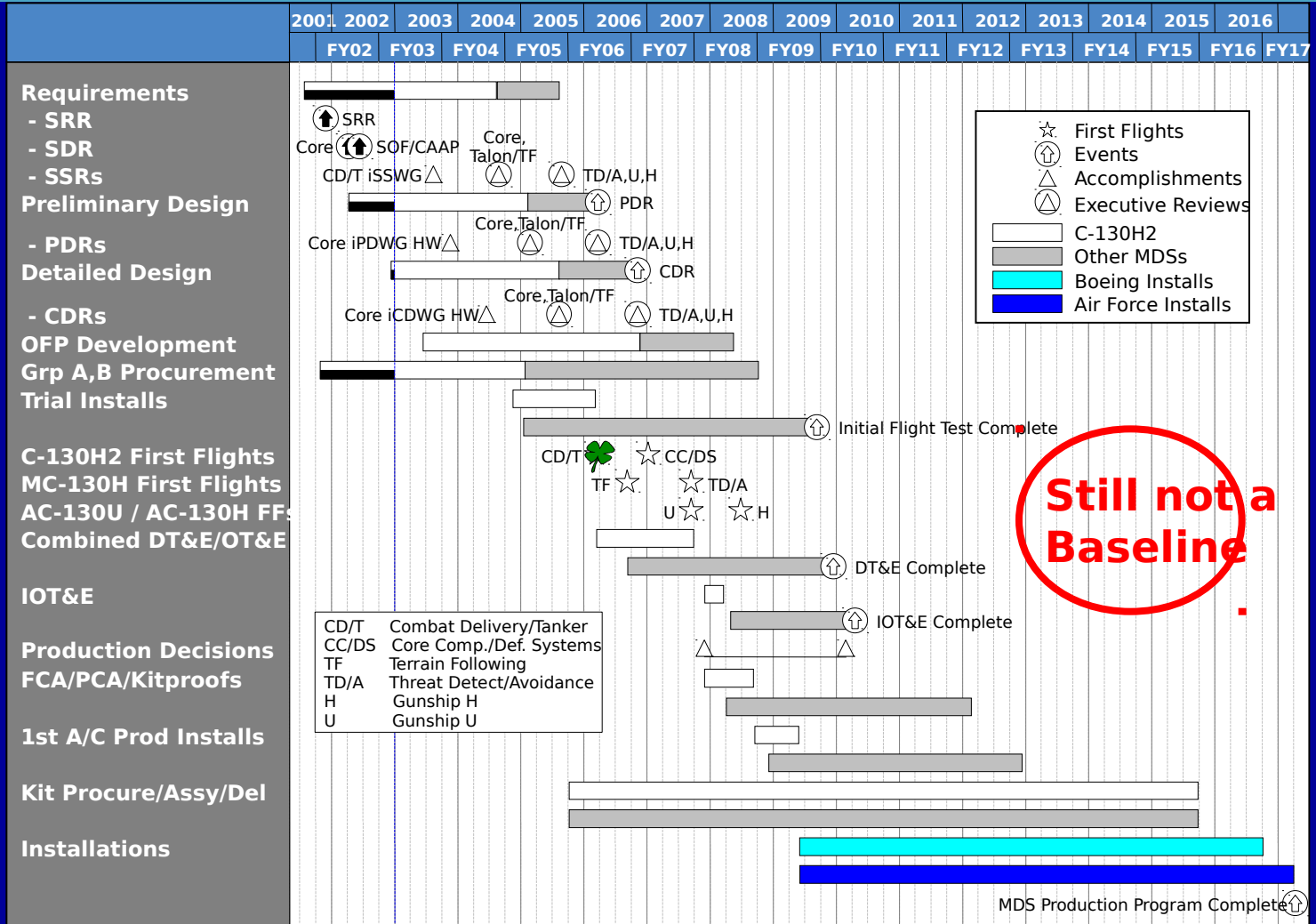
From Concept Through Installation and Support

MC-130P
MC-130E



Program Master Schedule

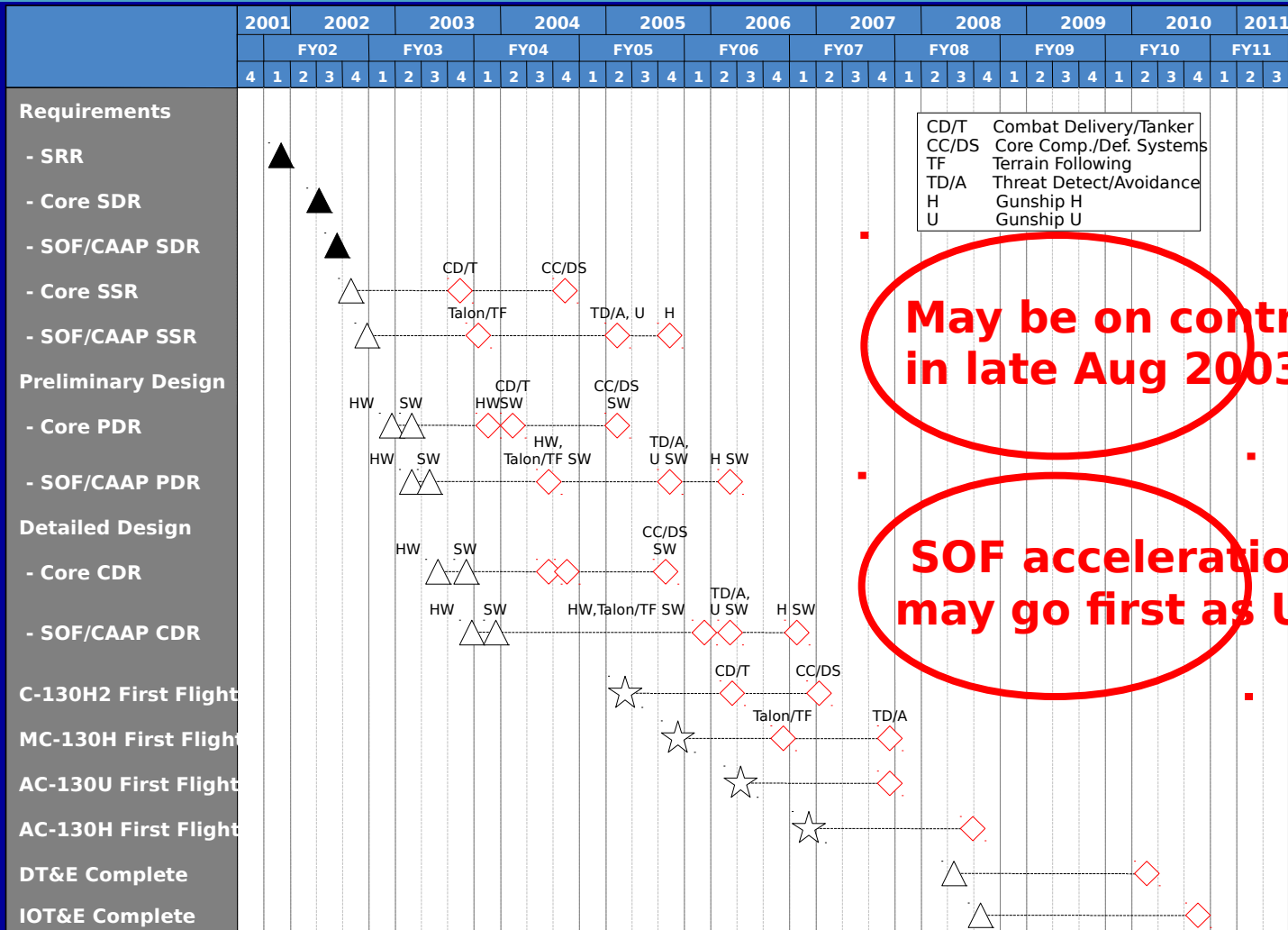
Program Overview





SOF/CAAP Changes - ECP 1302

Program Overview





Background

Program Overview



- ♦ **SOF requires operational AMP/CAAP Talon capability in FY08**
 - **Current AMP program schedule does not support capability until 2010**
- ♦ **Boeing was requested to study options to accelerate Talon capability**
 - **Boeing briefed SPO and AFSOC on study results on January 16, 2003**
 - **Boeing/USAF team modified the recommended approach to incorporate customer Most Important Requirements**



Program Overview

Customer (AFSOC) Most Important Requirements

♦ Talon Mission capability early

- AMP/CAAP Cockpit
- LPI/LPD TF/TA
- ESA

AFRC Most Important??

♦ Continue to improve current TF capability to meet current KPP requirement

- Safe at 250 ft. (currently at 700 ft.)

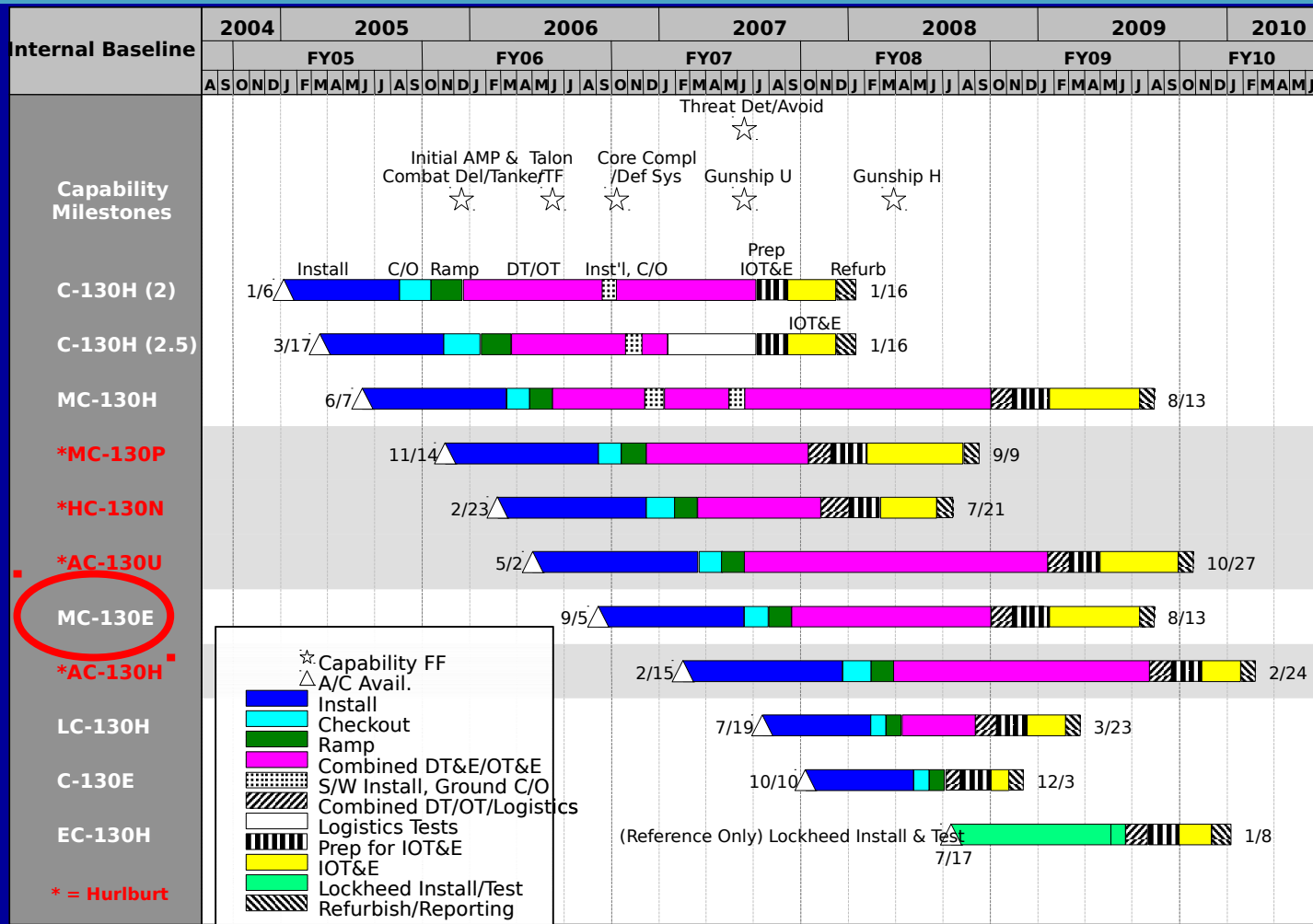
♦ Opportunities to convert H2s to Talons sooner





Trial Installs, Test, and Refurbish

Program Overview





C-130 AMP Top-Level Risks from PMR Meeting March 18, 2003

Program Overview



- ◆ EMD funding stability (BM-70)
- ◆ Funding for Training Systems (TR-12)
- ◆ GATM certification (S2-37, AV-102, AV-104)
- ◆ MDS definition and variations (AF-23)
- ◆ Supplier performance (AV-116)
- ◆ Requirements stability (AV-77)
- ◆ MDP development (AV-67)
- ◆ TF/TA development (S2-129)
- ◆ False Alarm requirements (S2-134)
- ◆ Secure Operating System certification (SW-127)

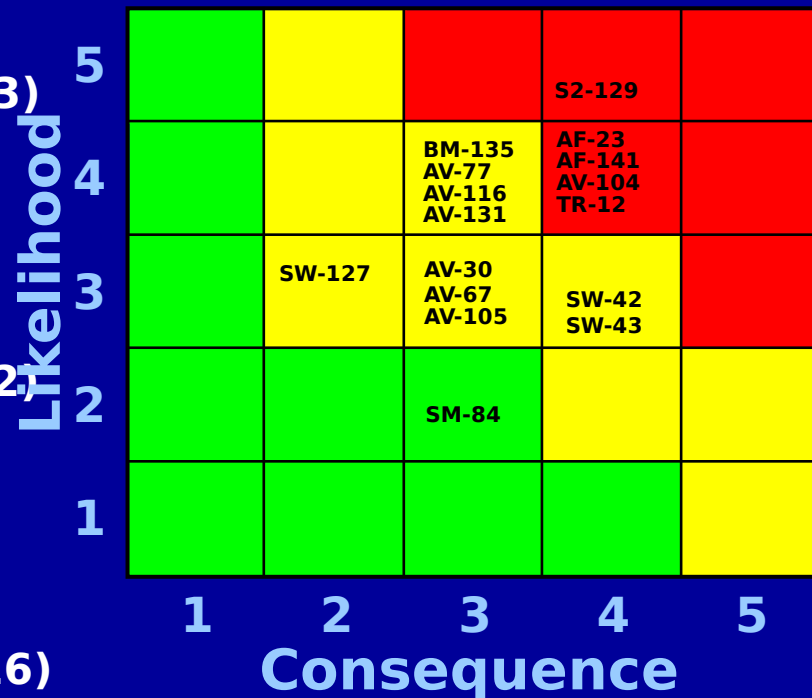
Likelihood	5		S2-134		S2-129	
	4			S2-37 AV-77BM-70 AV-102 AV-116	AF-23 AV-104 TR-12	
	3		SW-127	AV-67		
	2					
	1					
		1	2	3	4	5
		Consequence				



C-130 AMP Top-Level Risks from Risk Review Meeting March 20, 2003

Program Overview

- ♦ TF/TA Development (S2-129)
- ♦ MDS Definition and Variations (AF-23)
- ♦ **ECS Performance (AF-141)**
- ♦ GATM Certification (AV-105, AV-104)
- ♦ Funding for Training Systems (TR-12)
- ♦ EMD Funding Stability (BM-135)
- ♦ Requirements Stability (AV-77)
- ♦ Supplier Performance (SM-84, AV-116)
- ♦ MDP Development / **Software Integration** (AV-67, SW-42, SW-43, AV-131)
- ♦ Secure Operating System Certification (SW-127)
- ♦ **RF Interoperability (AV-30)**



**Based on
AFRC Input**



C-130 Avionics Modernization Program Challenges

Program Overview



- ◆ **Perform To Plan**
 - **Meet Expenditures**
 - **EAC Pressures**

- ◆ **Program Morale**

- ◆ **Manage Key Risks**

- **MDP Development**
- **Radar TF/TA**
- **Stable Program Funding**

- ◆ **Manage Critical Path**

- **Software (610 Hooks still not addressed)**
- **Suppliers**
- **Stable Requirements**

AFRC View -

- **Cost Growth**
- **Funding Cuts**
- **Rqmts flux**
- **Arch flux**
- **No Baseline**



Issues

Program Overview



- ♦ Capturing the “moving” C-130 configuration
 - TOs, TCTOs, 1067s
 - Modifications approved without 1067s
 - Developing “baseline” database
(April 2000 Baseline Freeze)
 - Issues to be addressed at quarterly Modification Management Meetings (MMM)
- ♦ Strengthen communication
 - Across IPTs
 - Issue integration
 - Product exchanges
 - Across locations
 - Information sharing

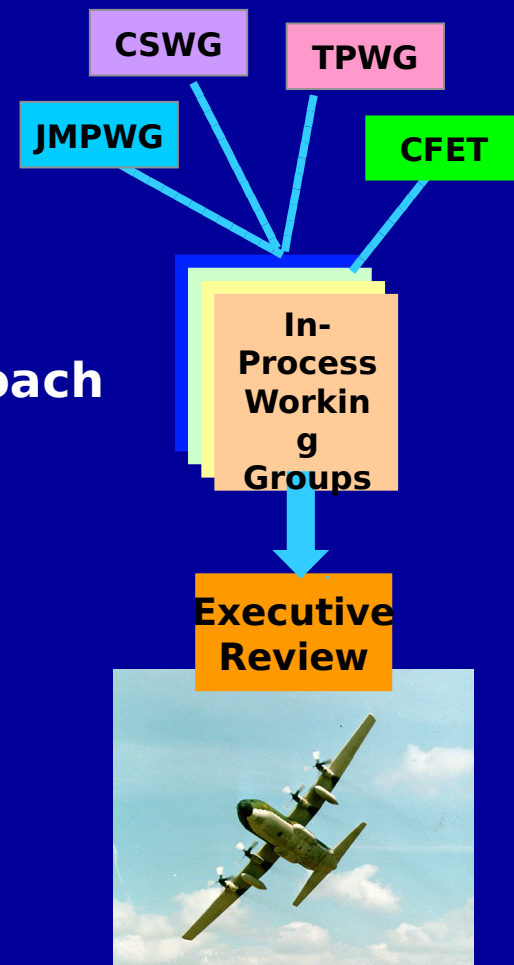


Program Overview

Incremental Design Reviews

◆ Incremental Design Review Process

- In-process Working Groups
 - IPT focus
 - Informal working group approach
- Pre-established entrance and exit criteria
- iSSWG/iPDWG/iCDWG
- Executive reviews
 - Summary of In-process Working Group accomplishments
- ◆ TRRs scheduled for incremental capability enhancements





C-130 Avionics Modernization Program Upcoming Events

Program Overview



Event	Date
♦ Software Integration Working Group (SIWG)	Apr 03
♦ SIF Software iPDWG	May 03
♦ Replan ECP Definitization	Jun 03
♦ SOF Acceleration UCA	Jun 03
♦ Test Planning Working Group (TPWG)	Jun 03
♦ Core iSSWG	Aug 03
♦ Core Hardware iPDWG	Nov 03
♦ PDR (H/W)	

(Have not yet occurred)

(Important Milestone to watch)



Impacts to AFRC

Program Overview

- ♦ **Program Management Issues**
 - **Lack of Program Baseline (Schedule & Funding)**
 - **Concurrency evident in new schedule**
 - **SOF Acceleration/Priority (MC-130E availability)**
- ♦ **MDS Variations**
 - **Tail number differences**
 - **Duration of mods (down-time)**
- ♦ **ECS Issues**
- ♦ **Software and System Integration**
 - **New MDP architecture for SOF/CAAP**
- ♦ **Training Planning/Funding Lagging (AMC Training Way Ahead)**
 - **Won't address Type 1 Training until FY04**
 - **Aircrew training systems not addressed until FY05**

C-130 Avionics Modernization Program



Backup Charts



Previous Cockpit Layout



Current Cockpit Layout



Program Scope - C-130 AMP Cockpit

Program Overview

**Radar
Replacement**

**Dual GPS
(RAIM, FDE,
and NAVWAR
Compliant)**

**N1/C-12 Compass
Replacement**

**New Central Air
Data Computer**

**New Cockpit Displays and
Layout**

- ◆ Multifunction Displays
- ◆ Head-Up Displays

**Pitot Static
System Upgrade**

NVIS

**Terrain Avoidance and
Warning System
With Digital Map**



**Traffic Collision
Avoidance System
(TCAS) With Mode
S**

**AC and DC
Electrical
System Upgrade**

**Flight
Management
System (FMS)
SCNS
Replacement
Dual
Autopilot/Flight
Director**

**Digital Flight Data
Recorder**

New Radios with:

- ◆ Data Modem
- ◆ Intercom

**Integrated Defensive
Systems
ALE/AAR-47 and ALR-
69**





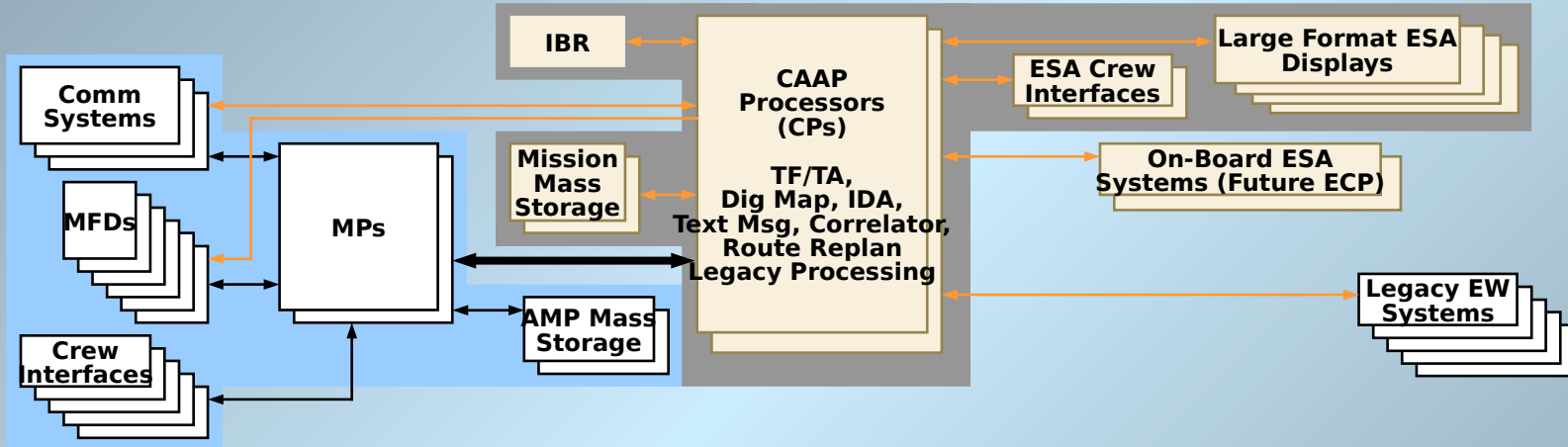
Option 2A Architectures Talons and Gunships

Program Overview

CT1 and CT2 plus Other AFSOC Configuration

AMP
Cockpit Upgrade
Equipment Suite

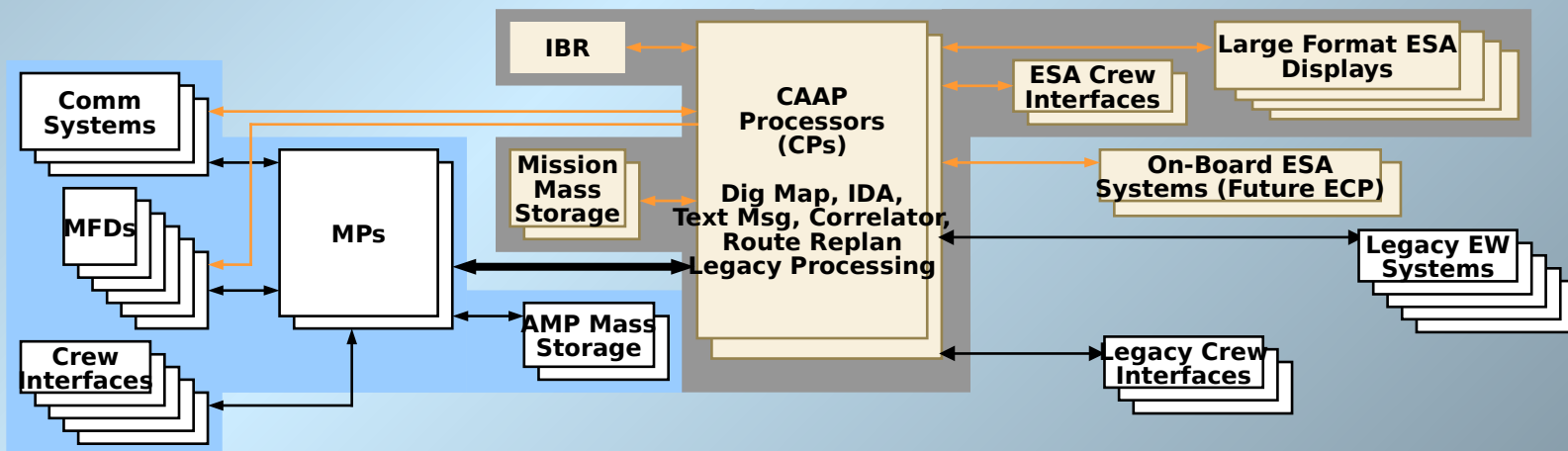
Accelerated
CAAP
Equipment Suite



GU and GH Configuration

AMP
Cockpit Upgrade
Equipment Suite

Accelerated
CAAP
Equipment Suite



Note that CAAP processor and associated systems can be installed in advance of AMP upgrade in CT and GU/H
Assumes large format displays upgrade concurrent with CAAP processor



C-130 Avionics Modernization Program

Demographics

Program Overview



Legend

- Customer Site
- Boeing Site
- Supplier
- Active Duty (AD)
- Air Force Special Operations Command (AFSOC)
- Air Force Reserves Command (AFRC)
- Air National Guard (ANG)



C-130 AMP Program-Level Risk General Risk Information - Open Risk 13 Title: Aircraft Discrepancies

Program Overview

Description: Aircraft Discrepancies that will need dispositions but are unrelated to the AMP upgrade can delay the completion of the kit installation and or the DT&E test program.

CAUSE: Historical data supports that due to this aging fleet and variation in MDS's the potential for problems regarding the airframe structure, aircraft system and weapons systems is high.

AFRC asks the question - How do you plan to deal with this?

- **Combined Govt and Boeing answer is 500 hrs of over and above labor included for each tail**